

09/867,662

MAIL STOP AF

Art Unit: 1762

Response to Final Action mailed July 17, 2004

Remarks

The co-pending serial number has been inserted in paragraph 15. Claim 30 has been amended to refer to the carrier gas for which there is an antecedent in claim 20.

The feature of former claim 5 has been incorporated in claim 1, and the feature of former claim 26 has been incorporated in claim 20. No new issues arise because the subject matter included in claims 1 and 20 was previously the subject of dependent claims.

The object of the invention is to make high quality silica optical waveguides. As noted in the introduction, it is very difficult to fabricate silica waveguides with the required delta n , where delta n represents the difference between the refractive index of the optical films, typically the buffer, core and cladding layers. The problem is that when you adjust the parameters to change the refractive index (in order to achieve the desired delta n) the absorption properties of the films also change, as illustrated by the FTIR spectra. You end up having to juggle a huge number of possible permutations of the values of the various parameters. What the Figures show is that it is surprisingly possible to change the delta n by varying the PH_3 flow rate alone without having any direct adverse effect on the FTIR spectra over the wavelength region normally of interest (1.3 – 1.55 μm) for optical waveguides. This effect is quite unexpected and not taught in the prior art. Thus, you can optimize the other parameters to minimize absorption peaks in the wavelength of interest, and once that optimization has occurred change the PH_3 flow rate to vary the delta n without upsetting the optimal values that have been set for the other parameters. This is surprising because it would be expected that all the effects are linked and that changing the PH_3 flow rate would affect the absorption characteristics, thus requiring the other parameters to be changed to compensate. One skilled in the art would expect that changing one parameter would have an affect on other properties, such as absorption characteristics.

The Examiner has cited Gau as a secondary reference allegedly showing the changing of the flow rate of a single precursor gas. However, it is respectfully submitted that Gau is non-analogous art. Two separate tests define the scope of analogous prior art: (1) whether the art is from the same field of endeavor, regardless of the problem addressed and, (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved. *In re Deminski*, 796 F.2d 436, 442

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[230 USPQ 313] (Fed. Cir. 1986); see also *In re Wood*, 599 F.2d 1032, 1036 [202 USPQ 171] (CCPA 1979). It is respectfully submitted that Gau is non-analogous art because it relates to a different field of endeavour (anti-reflection films as opposed to waveguides) and is not concerned with the same problem (establishing a desired delta n while maintaining optical quality). While it is possible that the refractive index in Gau may change, Gau is silent on the matter. Gau just talks about the reflectivity, not refractive index. A person skilled in the art seeking to solve the problem noted above would not find Gau of assistance because he does not teach anything about how to vary the refractive index between layers. It is not enough to say with the benefit of hindsight that the refractive index in Gau may change. In order to be relevant the reference has to positively teach the variation of a parameter for the purpose of changing the refractive index, and clearly in this respect Gau falls short.

It is noted however that the Examiner has also rejected the claims over the primary references alone. The Examiner acknowledges that the references are silent on a key aspect of the invention, which is to vary only the PH_3 flow rate in claim 1 or dopant gas selected from the Markush group in claim 20, in order to vary the delta n . However, the Examiner appears not to have taken into account the fact that claims first require the other parameters to be set at constant values to minimize absorption peaks. Once this has been done, the flow rate of the PH_3 is adjusted.

In the applicant's respectful submission, contrary to the Examiner's position, based on the teachings of the primary reference, a person skilled in the art would not expect to be able to achieve the desired delta n and maintain optical quality because all the prior art teaching suggests that the parameters are interlinked so that adjusting one would require compensating adjustment of the others. The applicants have shown in the examples surprisingly that the variation of the PH_3 flow rate alone results in a variation of delta n without an adverse affect on the absorption properties of the waveguide. This effect is clearly not taught in the prior art, and in the applicant's respectful submission is not obvious over the cited prior art.

Reconsideration and allowance are thus respectfully requested.

Respectfully submitted,

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